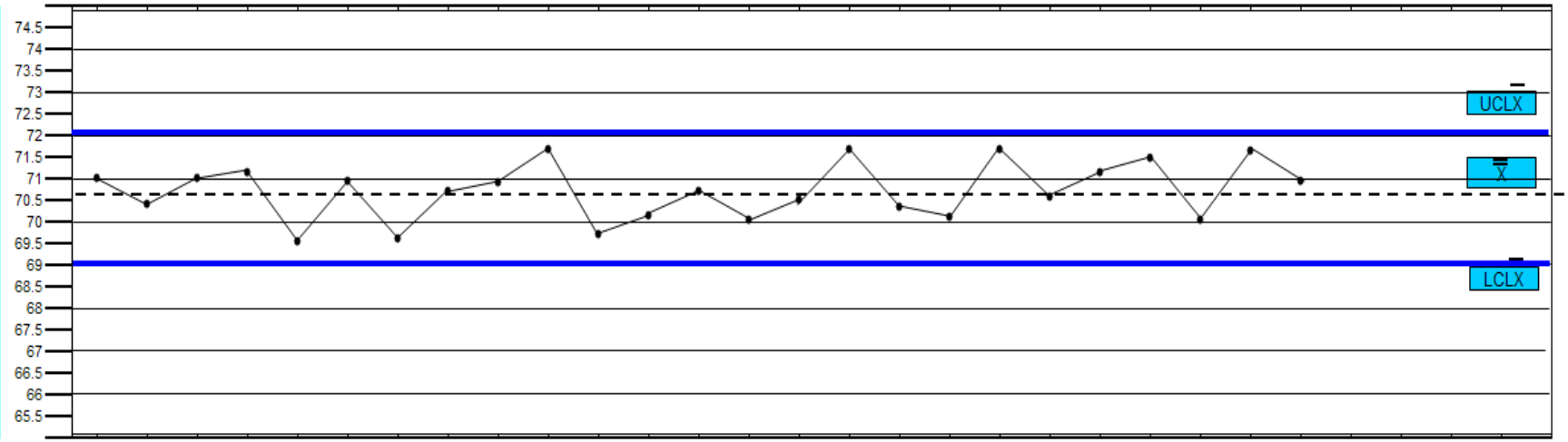
Part Number	Issue	Machine Type	Characteristic	Operation	Sample Size	Chart Number
130147	C	Addison	Length	Bend	5	2
Part Name	**Machine Number**	**Section**	**Specification**	**Code / Location**	**Sample Frequency**	**Data Control Limits Calculated**
Down Pipe	A	Bend	70mm +/- 5mm		25 parts	Current Year

AVERAGE X BAR



RANGE R

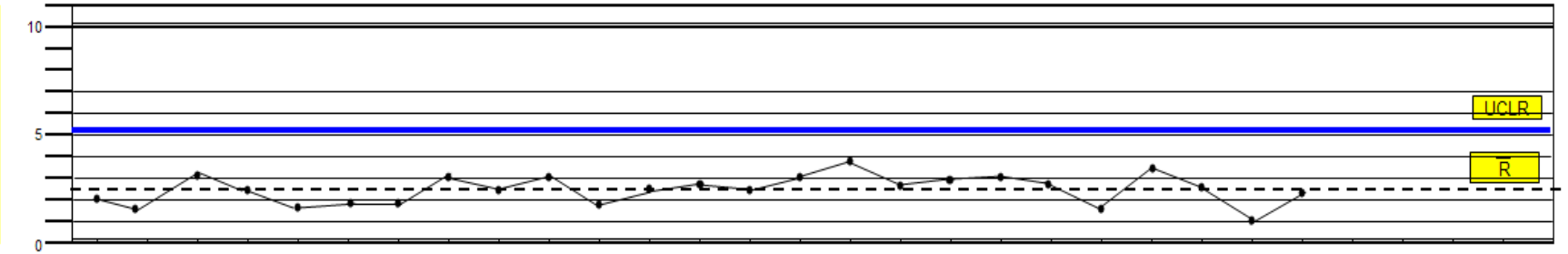


CHART ANALYSIS

$\bar{\bar{X}}$	$\bar{R}$
70.72	2.38
$UCL\bar{\bar{X}}$	UCLR
$= \bar{\bar{X}} + A2\bar{R}$	$= D4\bar{R}$
72.11	5.03
$LCL\bar{\bar{X}}$	LCLR
$= \bar{\bar{X}} - A2\bar{R}$	$= D3\bar{R}$
69.34	0

RESULTS

COMPONENTS																														
1	71.4	69.5	73.0	71.0	69.2	69.7	68.8	73.0	71.8	71.6	69.1	69.1	70.0	69.0	70.3	71.6	69.6	69.0	71.6	69.2	70.5	71.5	69.0	72.0	71.4					
2	72.0	69.5	70.0	71.0	68.8	70.7	69.3	70.0	69.3	71.5	70.1	70.0	69.5	69.7	68.8	71.5	69.0	70.7	71.5	69.9	72.0	71.5	69.7	72.0	72.0					
3	71.0	71.0	70.5	70.5	69.1	71.1	70.7	70.0	71.1	72.8	69.2	70.9	69.5	70.2	70.1	72.8	70.2	71.6	72.8	70.5	71.4	73.0	70.2	71.1	71.0					
4	70.0	71.0	71.5	71.0	70.1	71.6	69.4	70.4	71.3	72.6	69.1	71.4	72.1	71.4	71.8	72.6	71.6	71.4	72.6	71.6	70.5	72.0	71.4	72.0	70.0					
5	70.0	71.0	70.0	73.0	70.4	71.2	69.6	70.3	71.4	69.9	70.8	69.8	72.3	70.2	71.6	69.9	71.3	68.6	69.9	72.0	72.0	69.4	70.2	71.2	70.0					
X Sum	354.4	352.0	355.0	356.5	347.6	354.3	347.8	353.7	354.9	358.4	348.3	351.2	353.4	350.5	352.6	358.4	351.7	351.3	358.4	353.2	356.4	357.4	350.5	358.3	354.4					
X Bar	70.88	70.40	71.00	71.30	69.52	70.86	69.56	70.74	70.98	71.68	69.66	70.24	70.68	70.10	70.52	71.68	70.34	70.26	71.68	70.64	71.28	71.48	70.10	71.66	70.88	70.7				
Range	2.00	1.50	3.00	2.50	1.60	1.90	1.90	3.00	2.50	2.90	1.70	2.30	2.80	2.40	3.00	2.90	2.60	3.00	2.90	2.80	1.50	3.60	2.40	0.90	2.00	2.38				

STATUS

Log	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Time	8:30	09:00	09:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	18:30	19:00	19:30	20:00	20:30					
Date	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8	20.8					
Sig																														

Cpk = minimum of :-

$Cpu = \frac{USL - \bar{\bar{X}}}{3sd}$	$Cpl = \frac{\bar{\bar{X}} - LSL}{3sd}$
1.39	1.86
$1sd = \bar{R}/d2$	Cpk = 1.39

Constants for n = 5

D2 = 2.326
D3 = 0
D4 = 2.11
A2 = 0.58